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-cost glazed wall tiles rom common clay

and cheaper substitute for onal whiteware tiles, whose n building industry far exceeds y, is now offered by the Central Ceramic Research Institute) Calcutta. This is the result of a which the institute has de- for manufacturing low-cost all tiles with the Gangetic silt of Palta and Howrah (West as the starting material. The ve adequate crazing resistance act strength and conform to the Standard specifications for ware glazed wall tiles.

lazed tiles would cost less than whiteware tiles would. Energy ption in the CGCRI's process of glazed tiles would be about half needed for the manufacture of are tiles, as low firing tempera- 950°C) are employed in the . And the most salient feature is e raw material is cheap, and and abundantly available.

ng assigned the process to the al Research Development ation of India for commercial ation, the institute is now gating the utilization of Morvi at) common clay for producing glazed wall tiles. □

ctive black nickel coating solar energy conversion

ficient conversion of solar energy ermal energy, collector panels absorb strongly across the solar um (0.2-3.0 μm), and emit very in the infrared region (> 3 μm) quired. Ideally, a collector should absorb all the solar radiation and emit more through re-radiation. Although it is not possible to develop an ideal collector, a variety of coatings are being developed to provide the best possible combination of optical and thermal properties. Among them is the black nickel coating, which is very promising. When this coating is exposed to sunlight, the collector reaches a stagnation temperature of 140-150°C depending on the season, location, time of day, cloudiness, etc. Hence if water, air or organic fluids are passed at a calculated rate, hot water, hot air or organic vapours are produced which can be used for a number of applications—running an engine with organic vapours, solar cookers, etc. In this context the process developed by the Central Electrochemical Research Institute (CECRI), Karaikudi, for producing selective black nickel coatings holds considerable promise.

The process consists in the use of a suitable substrate and special additives for getting black nickel coatings. CECRI has produced electroplated panels of 90 cm × 60 cm size. The coated sample has been tested by Jyoti Ltd, Baroda, for applications in producing hot water and hot air and found to be suitable. The firm is likely to take up the know-how from CECRI. Also, the institute would be producing black panels of 2 m × 1 m size at the request of the firm. □

NIO perfects *Artemia* culture

The National Institute of Oceanography (NIO), Dona Paula, has developed technical know-how for mass cultivation of the brine shrimp *Artemia* in salt pans. *Artemia* is considered as the only suitable live food for larval stages of cultivable organisms.

The salt-producing areas all along the Indian coastline, having most of the infrastructure required for this purpose, offer an excellent scope for *Artemia* culture. As the market value of the brine shrimp cysts is as high as Rs 500/kg, *Artemia* culture holds great promise of providing handsome economic returns to the rural population of coastal areas.

The project was sponsored, at a cost of Rs 76,000, by Bharat Salt & Chemicals Industries (Mundra, Gujarat) Ltd, Bombay, to whom a detailed report has been submitted. □

CFRI designs a domestic *chulla*

A semi-portable double-chambered domestic *chullah* (stove) with a chimney and a somewhat similar but simpler portable *chullah* have been designed by the Central Fuel Research Institute (CFRI), Dhanbad, with the ultimate objective of developing a cheap and efficient coal-fired domestic oven capable of giving practically smokeless combustion. Tests conducted on the two *chullas* have shown a thermal efficiency of 21% for the semi-portable *chullah* and 25-27% for the portable *chullah*.

Inside

Microbial degradation of phenol in industrial wastes ... 170

Foundation Day at ITRC ... 170

Primary Communication in Science and Technology in India: Seminar Proceedings ... 172

Dr H.V.K. Udupa retires ... 175

The double-chambered *chulla* utilizes one chamber for devolatilization of coal and the other for burning the resultant coke. □

Microbial degradation of phenol in industrial wastes

A specific microbial culture, *Candida tropicalis* (CHP4), which has a high phenol-degrading capacity, has been isolated at the National Environmental Engineering Research Institute (NEERI), Nagpur. The researcher is Shri P. Kumaran, who carried out the study for his doctoral degree under the guidance of Dr N.M. Parhad of NEERI's Microbiology Division.

Phenol is a constituent of a variety of industrial wastes, one of the major being the coal carbonization industry's waste. The culture isolated is not affected by other secondary toxicants such as cyanide, thiocyanate, sulphide, and ammonium salts at concentrations present in such wastes. It can utilize 0.1-0.12 mg phenol per mg dry weight of cell mass per hour under the normal metabolic rate and 0.22-0.25 mg under high utilization rates. Its tolerance limit for phenol is 5350 mg/litre. Cyanide up to 10 mg/litre, thiocyanate up to 1450 mg/litre, sulphide up to 20 mg/litre, and ammonium salt up to 10,000 mg/litre at neutral *p*H do not impair the phenol utilization by the culture.

Open bench model studies with a hydraulic detention period of 10 ± 2 hr and an influent phenol concentration ranging between 800 and 3000 mg/litre have shown that the substrate loading that can be made is 3 kg phenol per kg mixed liquor suspended solids per day. The concentration of residual phenol in the treated waste is less than 1 mg/litre. The capacity of the culture to utilize phenol from an actual industrial waste, such as producer gas plant effluent or low-temperature carbonization waste, is equally good. A corresponding biochemical oxygen demand reduction is also achieved.

The practical implication of the work is that the culture can be used as a starter seed for biodegradation of phenol from phenol-bearing industrial wastes.

Shri Kumaran has been awarded Ph.D. degree by the Nagpur University for his thesis based on the study. □

Foundation Day at ITRC

The sixteenth Foundation Day of the Industrial Toxicology Research Centre (ITRC), Lucknow, was celebrated on 4 November 1981, Prof. Friedrich J. Wiebel of the Institute of Toxicology and Biochemistry, Neuherberg, Munich (FDR), delivering the address.

"We owe much of our present standard of living and health to chemicals, be they drugs, pesticides or synthetics, but we also recognize as well that the use of chemicals is not without danger," said Prof. Wiebel in his address. It was imperative, he emphasized, that we make an assessment of the benefits and risks involved in the use of chemicals and weigh these two against each other. While the benefits are known, our knowledge about the risks was not so sound, he added.

In his opinion, the greatest challenge to the toxicologist today was to acquire the know-how for predicting the long-term effects of environmental chemicals. This could not be achieved from animal experiments alone, but required basic studies on the mechanism of toxicity. Only then was it possible to make a rational decision on the risks versus the benefits of using a chemical.

The chemicals were here to stay with us for a foreseeable future and at some dose level they would inevitably pose a threat to our health and the life around us, he said.

According to him, toxicologists do realize that there is very little epidemiological evidence for the carcinogenicity of environmental agents. Although 80% of human cancer had been attributed to the exposure to chemicals, a closer examination showed that only a handful of chemicals had been unequivocally identified as carcinogenic to humans. On the other hand, there existed a massive body of data showing that hundreds of chemicals, many of them in the human enviro ment, cause cancer in experimen animals. Even if the attempt to remo such chemicals is not unrealistic, t cost of doing so, as for example, removing certain heavy metal polycyclic aromatic hydrocarbons fro the environment, was prohibitive. T speaker emphasized the need to s priorities as to which chemicals pos the greatest hazard and therefore had be removed from the environment.

Stressing the need for development *in vitro* systems, he said that suc systems would be useful for studying th mechanism of action under wel controlled conditions and would pro vide the means to screen potentiall toxic chemicals. Considerable progres had already been made in establishing battery of test systems for mutagenic and presumably, carcinogenic chemicals These systems ranged from bacteria t mammalian cells in culture. One would like to test toxic chemicals in human cells in culture, which reflect the properties of their tissue of origin, thu providing a model for evaluating organ specificity of potentially toxic agents, he added.

In view of her deep respect for life India could be in the forefront of developing alternative methods to the extensive use of animals in the safety evaluation of chemicals, said Prof. Wiebel. The speaker complimented ITRC for tackling problems of industrial and environmental toxicology in the country.

Dr C.R. Krishna Murti, ITRC's Director, in his welcome address, gave a resume of the laboratory's progress of work during 1980-81. Given below is a brief summary of ITRC's work as stated by its director.

As a priority programme in relation to the health problems of workers, the laboratory conducted several health surveys on workers handling chemicals with a view to identifying the effects on health; the surveys covered 700 workers in a textile mill and 70 workers exposed to cyanide fumes in electroplating and case-hardening operations. Reports

odying preventive measures were nitted.

t the request of the Department of ironment, ITRC initiated action on preparation of criteria documents, a of pollutants for which tolerance ts are to be fixed and identification reas for further research to develop onal tolerance limits.

With regard to environmental moring, data on the content of sulphur xide, nitric oxides and suspended ticulate matter in the vicinity of the nki Thermal Power Station in npur were collected by ITRC ntists in collaboration with those of National Botanical Research titute, Lucknow. Specimens of plants ound the power station were exam-d for assessing the extent of damage vegetation by noxious fumes charged by the power plant. A pilot rvey of noise pollution in and around cknow was carried out.

In studies concerning metal toxicity, was found that workers handling ment in storage and transport were und to excrete significantly more of anganese, chromium and lead, incating absorption of these toxic ments present in cement. In experimtal animals, pretreatment with nickel d simultaneous administration of lenium gave some protection against e toxic effect of cadmium on kidneys d lungs. Regenerating rat liver rovided a useful model for studying the ffect of toxic metals on growth.

Hexane-2, 5-diol, a metabolite of xane which was shown to produce nd-limb paralysis in experimental nimals, has provided a useful model for ucidating the mode of action of eurotoxic solvents. In view of the ffects of aromatic solvents on bone arrow and blood-forming cells, the ptake of radioactive iron by tissues and lood was used to monitor the effect of olvents on bone marrow metabolism.

To evaluate the toxicity of acrylamide nd other neurotoxic chemicals, a screen as developed by using high-affinity inding of radioactive ligands to eceptors located in specific areas of brain. Microbes isolated from soil were shown to degrade acrylamide and phthalate plasticizers.

By the techniques of interaction of particulate dusts with peritoneal macrophages or washed sheep red blood cells, a possible correlation was noted between the quartz content of coal dust and its ability to produce lung disease in coal-mine workers. In the model rodent system developed in the laboratory, coal-mine dust from Jharia and agate dust from Khambhat were shown to suppress the immunological and defence response of animals. Dust collected from units manufacturing slate pencils at Mandsaur (Madhya Pradesh) was found to be highly toxic in *in vitro* test systems.

Membranes from skeletal muscles were used to evaluate the toxicity of chemicals. Attempts were also made to develop simple cell systems from liver to screen the toxic action of chemicals.

With regard to toxicity of pesticides, endosulfan spray was found to produce phytotoxic effects on *moong* with increased residues in the pods at concentrations slightly above the recommended dose. The study may be useful in evaluating the dose levels versus uptake of toxic pesticides by the pollen of important food and cash crops. The commonly used pesticides dicofol, endosulfan, carbaryl and zinam were found to be potentially mutagenic in the bone marrow test system. Endosulfan was also shown to act on the central nervous system, producing both autonomic and somatic effects. By the use of the radioactive microsphere technique, endosulfan was shown to lead to a redistribution of cardiac output to heart and brain at the cost of the fraction going to kidney, lungs, muscle and large intestine.

Synthetic non-soap detergents manufactured by organized and small-scale sector industries were subjected to detailed toxicological evaluation. Protocols were laid down for quality control from human safety angle. □

CRRI and TRRL collaborate on IRRD data base

The Central Road Research Institute (CRRI), New Delhi, has established links, on an experimental basis, with the International Road Research Documentation (IRRD) system of the OECD Road Research Programme through the Transport and Road Research Laboratory (TRRL), UK. In this programme, TRRL acts as the English language coordinating centre. CRRI is the only institute in India having access to IRRD data base.

The experiment has been taken up in two phases. The first phase involves: (i) provision of personalized monthly selective dissemination of information (SDI) service and retrospective search from IRRD data base and backup service of the full text documents; and (ii) preparation of IRRD input sheets for all relevant serial and nonserial publications issued in India and for summaries of ongoing research.

The second phase of the experiment provides for enhancing the services to various user groups in India, extending the services to neighbouring countries, and getting IRRD input from them. The institute will also impart training to information personnel.

In the first phase of the experiment the IRRD subject fields of interest to the CRRI's user groups have been identified. User profiles for SDI service and retrospective search have been constructed by CRRI on specially designed proformas. The subject fields are analyzed and keyworded, and search strategy is formulated and communicated to TRRL to enable them to send computer printouts providing retrospective search as well as SDI service from the IRRD data base.

As many as 15 SDI services are in operation. Retrospective searches on 12 subjects have been received. A feedback mechanism has been devised to assess the relevancy of the services received and to modify the search strategy accordingly. User profiles are also updated constantly. Full text docu-

ments are arranged by the institute on demand from the users.

It is proposed to extend this facility to user groups in other organizations in India.

IRRD input sheets for all relevant Indian publications are prepared according to the IRRD working rules, and sent to TRRL regularly for inclusion in the IRRD data base. About 150 input sheets have so far been sent for inclusion.

CRRI is also providing to TRRL information from India for the diary of forthcoming events, conferences, etc. for the benefit of those concerned with road and road transport research in developing countries. □

PROGRESS REPORTS

RRL-Jorhat Annual Report: 1980

A highlight of the progress of R&D work of the Regional Research Laboratory (RRL), Jorhat, during 1980 was the commissioning of a semi-commercial plant for the manufacture of the organophosphorus insecticide Chlorfenvinphos, according to the annual report of the laboratory for the year published recently. The plant (capacity, 100 kg per batch), set up for the National Organic Chemical Industries, Bombay, who have bought the know-how, would generate data for designing a commercial plant of 600 tonnes per annum capacity which the firm is expected to set up in Maharashtra. Commissioned in November, the semi-commercial plant had produced about 600 kg of the insecticide by the year-end.

Another project which the laboratory pursued successfully relates to the development of an additive which, by depressing the pour point of high waxy crudes, improves their flow in pipeline transportation. Designated as SWAT-104, the additive was found to be as good as commercially available imported additives in performance, as revealed in both laboratory and field trials.

The laboratory made substantial progress in the abatement of water hyacinth (*Eichhornia crassipes*) infestation through various utilization potentials. Sponsored by the Commonwealth Science Council, this is an inter-country collaborative project whose primary objective is to develop an environmentally sound scheme for controlling and utilizing the weed. The laboratory's investigations have shown that good-quality papers and paper boards could be made from water hyacinth. A pilot plant for making handmade paper and board has been set up at RRL, Hyderabad. The laboratory also investigated the factors affecting the growth of the weed, and the utilization potential of the weed for production of biogas and microorganisms of commercial importance. In a rich mineral medium the weed multiplied very rapidly at the expense of the growth of an individual plant; in a poor nutrient medium, an individual plant grew fast but multiplied slowly. Phosphate was identified as one of the most important nutrient factors controlling the growth and multiplication of the plant, with an exponential relationship between phosphate concentration in water and specific growth rate of the plant. In fresh and dried conditions, water hyacinth could be digested anaerobically to produce biogas containing methane. A bench-scale biogas generation unit for batch and semi-continuous operation, consisting of a battery of six anaerobic digesters each stationed in temperature-regulated chambers, was commissioned.

Also under CSC's Rural Technology Programme, the laboratory took up a project to generate technology packages for agro-based industries in the participating countries, which include, besides India, Bangladesh, Malaysia and Sri Lanka. Another international project in which this laboratory, among other Indian institutions, was engaged is the Indo-Soviet project (1980-85) on earthquake prediction.

At the request of the Arunachal Pradesh government the laboratory is providing technical know-how a assistance for establishing, on turn- basis, a small-scale unit for mak water- and fire-resistant paper roof sheets (300 ft^2/day) from paddy stra

Agrotechnologies developed by laboratory for certain medicinal a economic plants were of considera potential to improving rural econon One such was for the cultivation vetiver and *Cymbopogon flexuosus* Sikimensis. The spent-out grass cou be used for making quality paper. T know-how for cultivation of *Agaric bisporus*, a winter species of edi mushroom, was transferred to so parties in Shillong.

A prototype of power-operat chipper developed by the laboratory f extracting oil from agarwood is a efficient replacement for a peda operated crusher and has good potenti to improve rural economy.

In regard to commercialization of th laboratory's processes released earlie mention may be made of the commercia production, during the year, of th additive for iron ore beneficiation, an successful trial runs in the vertical sha kiln cement plant at Kutch and th sodium hydrosulphite unit at Kanpur

Six processes were released t industry during the year; these relate to: (i) cement-like product from padd husk ash, (ii) direct-copy paper, (ii paper slate, (iv) flow improver (SWAT 104), (v) plastic slate, and (v) water filte candle. □

Primary Communication in Science and Technology in India

SEMINAR PROCEEDINGS

The latter half of the 70s witnessed concerted efforts by Indian scientists science editors and information scien tists to raise the quality of scientific and technical literature, especially because of the unsatisfactory standards of Indian science journals compared to those of the world's leading journals. The first attempt was made in October 1976 by the three premier science

lemies, viz. Indian National Science
demy (INSA), Indian Academy of
nces and National Academy of
nces, through the forum of an inter-
demy symposium held at INSA in
Delhi. In this, the participants,
tly fellows of these academies,
ewed the state of scientific literature
lished in India and called for, among
ers, the formulation of a national
icy for scientific publications.
mediately thereafter, in November
6, the Publications and Information
ectorate (PID) of CSIR was seized of
problem. At its silver jubilee seminar
'Science Publishing in India:
blems & Prospects' both working
entists and scientists engaged in
ence writing, editing and publishing
cussed the problem and came out
h a set of recommendations. But the
gest effort was made in December
'8 jointly by the Documentation
search and Training Centre of the
lian Statistical Institute and PID
ough another seminar sponsored by
Department of Science and
chnology. This seminar brought
ether not only scientists and science
tors but information scientists and
ence printers as well to focus
ention on primary communication in
ence and technology. The publication
ng noticed comprises the proceedings
this seminar—the only one of the
ee conferences whose proceedings are
ilable in print.

Published by PID and printed at
doc, the volume contains three
note addresses, 38 papers, and
ommendations formulated after
iberations.

What ails the Indian science journals
l what measures should be taken to
ng them on par with the world's
ding science journals, constitute the
ject-matter of the first two keynote
pers. While raising such searching
estions as to why young Indian
entists prefer to publish their papers
road, S. Ramaseshan in his keynote
dress is emphatic that, to persuade
lian researchers to publish in Indian
rnals, 'the only course of action .... is
to make a serious effort to improve our scientific publications'. And with the wealth of experience both as scientist and as science publisher, the author sets out a number of measures. So do R.N. Sharma and Y.R. Chadha in their keynote paper, which, while dealing with the entire mechanics of publishing a research journal, concludes with eight recommendations aimed at improving the quality of primary communication. In the third keynote address, R. Ramaswamy not only surveys authoritatively the printing facilities for science publishing in India and elsewhere, but suggests the type of printing technology that would be most appropriate to India in the future to achieve high standards of printing.

The 38 papers cover a wide range of topics of the science publishing scene, such as publication channels, status of Indian scientific periodicals, Indian research contributions in the world's major science periodicals, role of scientific and professional societies, criteria for quality, printing and publication facilities and resources, and the future of science publishing in India, to mention a few. An important section of the proceedings is the set of seven recommendations [*see CN*, 29 (1979) 12] which constitute the programme of action to improve the quality of communication in S&T in India.

The volume would be of value not only to scientists and science editors but to information scientists who will find material of interest to them. For, persons engaged in secondary information services would acquire a better understanding of the needs of those engaged in the generation and communication of primary information, as G. Bhattacharyya points out in his welcome address.

The 365-page publication (editors: R.N. Sharma of PID & S. Seetharama of DRTC) is available from: The Business Manager, Publications & Information Directorate, Hillside Road, New Delhi 110012. □

CONFERENCE BRIEFS

Eighth International Conference on Coal Science

Dr R. Vaidyeswaran of the Regional Research Laboratory, Hyderabad, who participated in the Eighth International Conference on Coal Science held in Dusseldorf (FRG), 7-9 September 1981, reports that the conference, convened after a long interval of 13 years, confirmed the reawakening interest in coal as a raw material and as a source of energy. Presented below is a brief account of the conference based on Dr Vaidyeswaran's report.

Sponsored by member countries of the International Energy Agency (IEA), and attended by some 250 delegates from several countries, the conference addressed itself to basic researches on coal. One hundred and forty-six papers encompassing (i) basic reactions of coal, (ii) fundamentals of gasification and combustion, (iii) chemistry of coal liquefaction, (iv) pyrolysis, and (v) other reactions were presented and discussed.

What provided a backdrop to the deliberations was a formal address by Dr D.W. Van Krevelin in which the well-known authority on coal reviewed the developments in coal science, especially the tremendous progress made during 1913-1963. Making a reference to the setting up of R&D institutions for coal research in different countries including India, in the fifties, he described the years 1955 to 1968 as the classical period for coal research: so prolific was the research output that seven conferences on coal science had been organized during this period.

The chemistry of coal liquefaction constituted the subject-matter of 44 papers, covering, as they did, the use of isotopes to study donor solvent liquefaction, and of olefins for hydroliquefaction, use of various donor solvents including model compounds for liquefaction, catalysts like zinc halides, tin salts, complex metal oxides, and iron sulphides for liquefaction, and examination and upgrading of coal-derived liquids. A few papers dealt with

the liquefaction characteristics of particular types of coal and lignite, as, for example, lignite from West Germany and coals from Poland and Yugoslavia.

On the fundamental aspects of gasification and combustion of coal there were 22 papers embodying the results of studies on the use of catalysts such as Ni, K, V and Ba for gasification and on reactivity of coal to steam, carbon dioxide or hydrogen by thermogravimetric measurements. Reported at this session were, among others, the gasification of high-ash Brazilian coal and Yugoslavian lignites, use of alkali-metal catalysts to bring down the temperature of gasification, combustion of coal particles, reactivity of char to oxygen, surface segregation in aluminosilicate minerals, and formation of nitric oxide in coal flames.

Thirty-three papers covered basic reactions on coal like petrography, characterization of specific coals, and reactions such as methylation by reductive and nonreductive procedure, alkylation, reduction of coal with HI and with hexamethylphosphoramide-sodium-*tert*-butyl alcohol mixture. The increasing importance of petrography as a tool in coal research was evident from a number of papers which reported its application, as also of fluorescence of vitrinite, in the understanding of hydrogenation and coking mechanisms.

Pyrolysis and carbonization of coal was discussed in 23 papers, which covered various aspects like pyrolysis gas chromatography, rapid pyrolysis and pyrolysis under pressure, reaction mechanisms and kinetics, pyrolysis of model compounds such as naphthols, phenols, ethers and asphaltenes, and hydropyrolysis. A number of papers from Bergbau Forschung laboratories, Essen, were devoted to the kinetics of pyrolysis. The influence of heating rates, as high as 10^7K/s in some cases, on the evolution of gases and tar was reported. Some papers reported the results of carbonization of specific coals, for example Singareni coal (based on the work done in RRL, Hyderabad) and Hungarian brown coal, studied with a view to elucidating kinetics.

The use of sophisticated tools like NMR, XPS, GPC, ^{1}H, ^{13}C NMR, electron probe microanalyzer, ESR of free radicals, pyrolyzer coupled to GC, Mössbauer spectroscopy, and scanning electron microscope for analysis was discussed in a number of papers.

At the closing session Dr J. Gibson, Coal Science Adviser, National Coal Board, UK, and chairman, IEA coal working party, summed up the proceedings and pointed out the future prospects for coal.

The next coal science conference is scheduled to be held in Pittsburg (USA) in 1983. □

* * *

International Society for Neurochemistry Meet

Dr P.K. Seth of the Industrial Toxicology Research Centre (ITRC), Lucknow, participated, on an invitation from the organizers, in the Eighth Meeting of the International Society for Neurochemistry held at Nottingham, UK, 6-11 September 1981. Dr Seth's report:

Attended by over 2000 neurochemists from different countries, the meeting discussed current advancements in neurochemistry in 13 symposia, 9 colloquia, 10 round tables and several oral and poster sessions. A symposium on perinatal biochemical changes and brain development, sponsored by Uneso and the International Brain Research Organisation, was also held.

At a colloquium on Mechanism of Neurotoxic Disease, neurotoxicity of an artificial food colour (Erythrosin-B) was described by Dr E. Silbergeld (USA), who provided evidence that Erythrosin-B can interfere with the nerve transmission process and inhibit (Na^+, K^+)ATPase activity. She also discussed the methods for rapid testing of neurotoxic substances. Discussing the mechanism of action of pyrethroids, Dr J. Ven den Bercken (The Netherlands) presented evidences to show that sodium channel in the nerve membr is the primary target site for pyreth toxicity. Studies on primary myelination in response to toxic ag were presented by Dr Wendy Cam (USA), who showed that triethyl hexachlorophene, and acetylethyl ramethyltetralin and halogenated s cylanilides can interact with membra of myelin, mitochondria and reti causing edematous vacuolation.

Presenting their studies on 'Defect the organization and transport of axonal cytoskeleton produced chemical neurotoxins', Dr Grifin a coworkers (USA) observed that ac lamide and certain other neurotox produce intra-axonal accumulation neurofilaments as an early manif tation of their toxicity. Their stud suggested that acrylamide, hexacarbo and β, β'-aminopropionitrile might al the normal interactions between mic tubules and neurofilaments.

Toxicity of metals, acrylamide a solvents formed the subject of anoth scientific session at which Dr Walu (Sweden) described the toxicity acrylamide in cultured neuronal c lines, and Dr Lapin and cowork (USA) presented their studies behavioural and enzymic changes in *vivo* intoxicated rats.

Dr Seth, while summarizing the wo done at ITRC on the neurotoxicity acrylamide, reported that this monom appears to exert its toxicity by inhibiti the activity of brain glutathione-transferase, an enzyme responsible f its biotransformation. The results fro his laboratory also suggest th maintenance of cellular glutathio levels is the critical factor in the defen mechanisms against neurotoxicity acrylamide.

Dr Seth gave a lecture on 'Mutagen carcinogenic properties of phthalic ac esters' at the Institute for Occupation Medicine, University of Munster, FR on an invitation from Deutsch Forschungsgemeinschaft.

PERSONNEL NEWS

Dr H.V.K. Udupa retires

Handady Venkata Krishna Udupa, ctor, Central Electrochemical arch Institute (CECRI), Karaikudi, ed on 31 October 1981.

ining CECRI as Junior Scientific cer in 1953, he headed the institute cientist in charge from 1967 and as ctor since 1970.

During his stewardship the institute de noteworthy contributions to the ancement of both fundamental trochemistry and electrochemical nology. One of his outstanding es of work has been the develop- t of the rotating electrode technique roduce organic as well as inorganic micals. Equally significant is the ct reduction technique he and his eagues have developed for produc- metal powders from their oxides. list of techniques or processes or ducts in the development of which Udupa has been associated includes: nium substrate insoluble anodes; electrochemical processes for the paration of chlorates, perchlorates, ium gluconate, succinic acid, amin- enols, dialdehyde starch, zinc from anizer's ash, iron powder, lead-acid ery for low-temperature operation, el-cadmium cells, and dry cells.

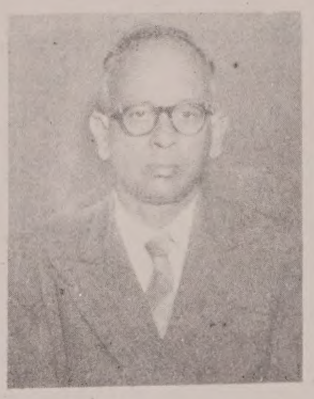
r Udupa is a fellow of the Indian ional Science Academy, the itution of Chemists, and the Society the Advancement of ctrochemical Science and nology; and member of the trochemical Society of USA and the ernational Society of trochemistry.

Among the honours and awards received by Dr Udupa are the Federation of Indian Chambers of Commerce and Industry's Award for 1973 in recognition of his contributions to electrochemistry, FICCI's 1974 award to CECRI in recognition of its corporative initiative in research in science and technology; H.K. Sen Memorial Medal (1979) of the Institution of Chemists (India); and Indian Merchants' Chambers' Diamond Jubilee Award (1971). Dr Udupa and his team have been recipients of as many as seven invention awards of the National Research Development Corporation of India.

Widely travelled on scientific missions, he led in 1981 an Indian delegation to the second Soviet-Indian Symposium on Electrochemistry and participated in the Mendelev Congress (1981) on General and Applied Chemistry in Baku, at the invitation of the Academy of Sciences of the USSR. □

Dr K.S. Rajagopalan is CECRI's Acting Director

Dr K.S. Rajagopalan, Scientist F, has taken over as Acting Director of the Central Electrochemical Research Institute (CECRI), Karaikudi, effective 1 November 1981 after Dr H.V.K. Udupa retired.



Born on 15 October 1923 in Kummattithidal village, Tanjore district, Dr Rajagopalan obtained his B.Sc. (Hons) in chemistry from the Andhra University in 1945, and M.Sc. in chemistry (1946) and Ph.D. (1949) degrees from the Delhi University. Starting his career with CSIR at the National Physical Laboratory, New Delhi, in 1949, he moved in 1951 to CECRI where he has been holding the position of Scientist F since 1976.

Having organized at CECRI research in fundamental and applied problems in corrosion and its prevention, Dr Rajagopalan has formulated theories of corrosion potential and polarization phenomena and has developed several new techniques for the study of corrosion, inhibition and passivity.

Dr Rajagopalan has participated in a number of international conferences concerned with corrosion: Fifth International Congress on Metallic Corrosion (Tokyo, 1972); Seventh International Congress on Metallic Corrosion (Rio de Janeiro, 1978), wherein he chaired one of the sessions; and the meetings of the International Corrosion Council and International Corrosion Congress (Mainz, FRG, 1981). In 1973 he visited USSR to study developments in corrosion science and anti-corrosion technology in that country; he was leader of the Indian delegation to USSR in June-July 1975 which concluded an agreement for cooperation between the two countries in the field of corrosion and its prevention. In November 1980 he again led an Indian delegation to USSR to work out collaboration in the field of corrosion protection of metals, and in December 1980 visited Bulgaria to discuss collaboration in the field of corrosion protection of metals.

As UNIDO expert he assisted, during 1975-76, the Government of Cuba in adopting corrosion protection measures.

Dr Rajagopalan has to his credit more than 200 research papers in electrochemistry and metallic corrosion and corrosion prevention, and some 50 patents on anti-corrosion processes and products.

Associated with the Society for Advancement of Electrochemical Science and Technology since 1964, he was its vice president during 1969-1971. He is a member of CSIR's Corrosion and Metals Research Committee and of the Indian Standards Institution's

Corrosion Protection Sectional Committee.

He is recipient of the National Research Development Corporation of India's invention award for his work on vapour phase inhibitors, and of the Mascot National Award (1980) of the Electrochemical Society of India for meritorious work in corrosion science and technology. □

Shri R. Paramasivam

The promotion of Shri Ramalinga Paramasivam of the National Environmental Engineering Research Institute (NEERI), Nagpur, as Scientist EI has been announced [*CN*, 31 (1981), 167.]

Shri Paramasivam (born 3 Jan. 1939) obtained bachelor's degree in civil engineering with first class (honours) in 1962 and master's degree in public health engineering, also with first class, in 1963, both from the Madras University.

With NEERI since 1964, Shri Paramasivam has specialized in water supply and treatment, particularly water filtration. Since 1975 he has been engaged in the research-cum-demonstration project on slow-sand filtration for rural water supplies, a project sponsored by the WHO International Reference Centre (WHO-IRC) for Community Water Supply, The Hague. The principal investigator and coordinator for the programme in India, he was also for some time a short-term consultant for WHO-IRC's slow-sand filtration project, and has visited UK, The Netherlands, Moscow, Thailand, and Singapore under various programmes. He is a member of the Indian Water Works Association and Indian Association for Water Pollution Control. Has about 20 publications to his credit. □

Appointments/Promotions

At the National Geophysical Research Institute, Hyderabad, the following Scientists B have been promoted, on assessment, as Scientist C with effect from dates mentioned in parenthesis: Shri T. Simhadri Sastry (12 Sep. 1980), Shri P.K. Agarwal (1 Oct. 1980), Dr V.P. Dimri (1 Oct. 1980), Shri T. Gangadhara Rao (12 March 1981), Shri M.V.R. Chowdhury (12 March 1981), Dr P.D. Saraf (12 March 1981), Dr M. Nageswar Rao (12 March 1981), Dr D. Suryanarayana Murthy (12 March 1981), Dr P. Rama Rao (12 March 1981), Dr G. Venkateswar Rao (5 April 1981), Shri B. Shanker Reddy (7 June 1981), and Dr R.K. Verma (30 Aug. 1981).

Also at NGRI, promoted on assessment are: from Technical Officer B to Technical Officer C—Shri K.K. Bhowal (31 May 1980), Shri C.S. Murthy (30 July 1980), Shri T. Mohandas (1 July 1981); from Scientist B1 to Scientist C1—Shri Balesh Kumar (30 July 1980); from Senior Scientific Assistant to Scientist A—Dr B.L. Narayana (6 Jan. 1981; presently working as Scientist B in a project), and Shri M.M. Dixit (8 Jan. 1981); from Senior Technical Assistant to Technical Officer A—Shri V.K. Saxena (2 July 1981), Shri T.J. Banaji (3 July 1981), Shri G.S. Sarma (3 July 1981), and Shri K. Syam Prasad (3 July 1981). □

PATENTS INFORMATION

Indian Pat. 148657 (Application No. 398/Del/78)

Process for the production of 99%pure potassium carnallite

S. Mahapatra, S.N. Das, and P.K. Patil
Regional Research Laboratory, Bhubaneswar

The process, aimed at the utilization of lean magnesite, consists in digesting lean magnesite (magnesium content, about 25%) with the byproduct mixed acid from another process (preparation of potassium nitrate from potassium chloride and aqueous nitric acid vide Indian Pat. 145213) and separating the impurites. The resultant mother liquor is saturated and cooled to room temperature by which 99% pure carnallite ($KCl.MgCl_2.6H_2O$) is obtained. The double chloride can be easily decomposed with water to its constituents from which magnes magnesium metal can be obtaine

The significance of the process the fact that only 3-10% of India' land reserves of magnesite, estima 70 million tonnes, are of refra grade. Also, magnesia of marine is not suitable for refractory use contains boron, a harmful ingredie refractories.

PATENTS FILED

483/Del/80: Improved wheel for static testing of carts and vehicles, C.G. Swaminathan, S.S. & S. Pal—Central Road Res Institute, New Delhi.

538/Del/81: A process for manufacture of improved med pallets for use as subdermal implan controlled release of a drug fo extended period of time in a huma animal system, N.M. Khanna, Gupta, J.P.S. Sarin, S. Singh & (Sm Khanna—Central Drug Rese Institute, Lucknow.

ANNOUNCEMENTS

Leather Week & Tanners' Get-togethe

The Central Leather Research Inst (CLRI), Madras, will be holding its Leather Week from 31 January February 1982. The Tanners' together, which also forms part of annual function, will be held fron January to 4 February 1982. The th of the get-together, 17th in the serie 'The second phase of developmen leather industry in India'. There wi four technical sessions of the together devoted to: (i) Recent tr and latest developments in lea manufacture; (ii) Leathergoods & f wear; (iii) Policies and program and (iv) Views forum and CL research programme for 1982-83.

All correspondence in connec with the get-together may be addre to: The Conveners, Tanners' together-1982, Central Lea Research Institute, Madras 600 020

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RN 4